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54 **A wire-rod block.**

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EP 0 332 597 B1

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Description

The present invention relates to a wire-rod block forming part of a wire rolling line and including two roll rings between which the wire rod is rolled, an input drive shaft and a gearing which is effective in transmitting drive torque from a drive shaft to the rings; see e.g. US-A 4 019360.

A known wire-rod block of this kind is shown in Figure 1. In the case of this known block, the drive torque generated by the input shaft 1 is transmitted over a helical bevel gear 2 and a gear wheel 3 which has helical teeth and is mounted on a roll-ring carrying shaft 4, which, in turn, drives a roll-ring carrying shaft 6 synchronously with the shaft 4, over a gear wheel 5.

The object of the invention is to improve a wire-rod block of this kind, by reducing the number of rotating parts and by distributing the drive torque of the input shaft more efficiently.

This object is achieved with a wire-rod block of the aforesaid kind in that, in accordance with the invention, the input drive shaft drives one of the roll-ring shafts directly over a first bevel gear and also an output shaft over a gear, said output shaft in turn driving the shaft of the other roll-ring over a second bevel gear, wherein the transmission ratio of the gearing and the bevel gears are such that the roll rings will rotate at mutually the same peripheral speed. The inventive wire-rod block thus has a separate bevel gear for transmitting the drive torque to each roll ring. Since the properties of the bevel gear of the known construction are dimensioned for the maximum drive torque that can be transmitted to the roll rings, the inventive construction enables a larger torque to be transmitted than said known construction, owing to the fact that the drive torque is distributed between two bevel gears. Furthermore, the inventive construction provides a more compact unit with fewer shaft bearings, because the reduction gear located behind the bevel gear of the known construction is not found in the inventive block. The inventive block is also advantageous from the aspect of maintenance, since the block can be easily disengaged from the wire rolling line and removed therefrom entirely, thereby enabling maintenance to be carried out at some other location.

So that the invention will be more readily understood and further features thereof made apparent, a preferred embodiment of the invention will now be described in more detail with reference to the accompanying drawings, in which,

Figure 1 is a perspective view of a known wire-rod block, partly in section,

Figure 2 illustrates schematically an inventive block from above and in horizontal section, taken above the bevel gears, and

Figures 3 and 4 are vertical sectional views of the block shown in Figure 2 taken on the lines III-III

and IV-IV in Fig. 2.

The wire-rod block according to the invention includes an input drive shaft 10 which drives an output shaft 12 via a reduction gear 11, said output shaft being intended to form the drive shaft for the nearest wire-rod block in the wire rolling line. The shaft 10 also drives a shaft 15 via a bevel gear 13. The shaft 15 is perpendicular to the shaft 10 and carries a roll ring 16 on the end thereof remote from its bevel gear. The other roll ring, 18, of the block is carried by a shaft 17, which is driven by the output shaft, via a bevel gear 14. The described components, with the exception of the roll rings 16, 18, are enclosed and journaled in a housing 20.

The roll rings 16, 18 of the illustrated embodiment have mutually the same diameter, which means that the shafts 15, 17 carrying the roll rings shall be driven for rotation at mutually the same speed, so as to achieve uniform rolling of the wire rod between the roll rings. The input shaft 10 is preferably driven at the same speed as that desired of the shaft 15, which thus implies that the bevel gear 13 shall have a transmission ratio of 1:1. Furthermore, this means that changing-up of the bevel gear 14 shall be commensurate with the change-down in the reduction gear 11, and consequently the transmission ratio in the gear 14 is inversely proportional to the transmission ratio in the gear 11.

The reference 19 identifies shaft couplings, which are shown schematically in Figures 2-4.

As will be seen from the foregoing, the invention provides a wire-rod block of simple construction and with only few components. Compared with prior art wire-rod blocks, the invention provides a compact block with fewer components and therewith fewer bearings. This enables the roll rings to be rotated at higher speeds without risk for an increase in vibration stresses or bearing fractures. Maintenance is also simpler with the inventive block, since the whole unit can be dismantled and taken away from the rolling line, owing to the shaft couplings, whereafter a replacement can be readily fitted. This means that idling times will be shorter than was earlier the case and that maintenance need not be carried out on site.

Claims

1. A wire-rod block forming part of a wire rolling line and including two roll rings (16, 18) between which the wire rod is rolled, an input drive shaft (10) and a gearing (11, 12, 14) which is effective in transmitting the drive torque of a drive shaft to the rings, characterized in that the input drive shaft (10) drives one (15) of the roll ring shafts directly, over a first bevel gear (13) and also an output shaft (12), over a gear (11), said output shaft in turn driving the shaft (17) of the other roll ring, over a second bevel gear

(14), wherein the transmission ratio of the gearing and the bevel gears are such that the roll rings will rotate at mutually the same peripheral speed.

2. A block according to claim 1, characterized in that the gearing (11) is a reduction gear, wherewith the output shaft (12) is intended to drive the nearest forewardly lying wire-rod block in the wire rolling line.

3. A block according to claim 2, characterized in that the bevel gear (13) between the input shaft (10) and one (15) of the two shafts carrying the roll rings (16,18) has a transmission ratio of 1:1, and in that the transmission ratio for the other bevel gear (14) is inversely proportional to the transmission ratio of the reduction gear (11).

Revendications

1. Bloc de laminage à fil constituant une partie d'une chaîne de laminoirs à fil et comprenant deux bagues de laminage (16,18) entre lesquelles est laminée la tige devant constituer le fil, un arbre d'entraînement d'entrée (10) et un mécanisme (11,12,14) transmettant le couple d'entraînement d'un arbre d'entraînement aux bagues, caractérisé en ce que l'arbre d'entraînement d'entrée (10) entraîne l'un (15) des arbres de bague de laminage directement, par l'intermédiaire d'un premier engrenage conique (13) et également un arbre de sortie (12), par l'intermédiaire d'un mécanisme réducteur (11), ledit arbre de sortie entraînant à son tour l'arbre (17) de l'autre bague de laminage, par l'intermédiaire d'un second engrenage conique (14), dans lequel le rapport de transmission du mécanisme et des engrenages coniques sont tels que les bagues de laminage tournent à la même vitesse périphérique entre elles.

2. Bloc selon la revendication 1, caractérisé en ce que le mécanisme (11) est un mécanisme réducteur, avec lequel l'arbre de sortie (12) est prévu pour entraîner le bloc de laminage à fil se trouvant le plus près devant dans la chaîne de laminoirs à fil.

3. Bloc selon la revendication 2, caractérisé en ce que l'engrenage conique (13) entre l'arbre d'entrée (10) et l'un (15) des deux arbres portant les bagues de laminage (16,18) possède un rapport de transmission de 1:1, et en ce que le rapport de transmission pour l'autre engrenage conique (14) est inversement proportionnel au rapport de transmission de l'engrenage réducteur (11).

Patentansprüche

1. Drahtwalzblock, der einen Teil einer Drahtwalzstraße bildet und zwei Walzscheiben (16, 18) aufweist, zwischen denen der Walzdraht gewalzt wird, einer Eingangs-Antriebswelle (10) und einem Getriebe (11, 12, 14), welches das Antriebsdrehmo-

ment einer Antriebswelle auf die Scheiben überträgt, dadurch gekennzeichnet, daß die Eingangs-Antriebswelle (10) eine (15) der Walzscheibenwellen direkt über ein erstes Kegelradgetriebe (13) und auch eine Ausgangswelle (12) über ein Getriebe (11) antreibt, wobei die Ausgangswelle ihrerseits die Welle (17) der anderen Walzscheibe über ein zweites Kegelradgetriebe (14) antreibt, wobei das Übersetzungsverhältnis der Getriebe und Kegelradgetriebe derart getroffen ist, daß die Walzscheiben mit gegenseitig gleicher Umfangsgeschwindigkeit rotieren.

2. Block nach Anspruch 1, dadurch gekennzeichnet, daß das Getriebe (11) ein Untersetzungsgetriebe ist, wobei die Ausgangswelle (12) dazu vorgesehen ist, um den nächst vorwärts liegenden Block in der Drahtwalzstraße anzutreiben.

3. Block nach Anspruch 2, dadurch gekennzeichnet, daß das Kegelradgetriebe (13) zwischen der Eingangswelle (12) und einer (15) der beiden Wellen, welche die Walzscheiben (16, 18) tragen, ein Übersetzungsverhältnis von 1:1 hat, und daß das Übersetzungsverhältnis für das andere Kegelradgetriebe (14) dem Übersetzungsverhältnis des Untersetzungsgetriebes (11) umgekehrt proportional ist.

